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Lisbon Strategy and Policies for the Information Society
Lisbon Strategy and i2010

Use of Computers and the Internet in Schools in Europe 2006

Country Brief: Netherlands

6 / 2006

Key findings

All Dutch schools now use computers for teaching and have internet access. 92% use the internet via a broadband connection. With this figure the Netherlands ranks at number 4 of the 27 countries participating in the survey. There is hardly any variation between school types and with regard to broadband access between urban and rural areas:

A majority (51%) of the teachers using computers use them in between 10% and 50% of all lessons. A rather low 12% state, that they use computers in more than half of their lessons. Teachers in vocational schools use computers in class more frequently than their colleagues in general education.

Older and younger teachers (indicator used here: years of teaching experience) make use of computers and the internet in class rather equally, with – depending on age group – between 26% and 32% using ICT in more than half of the lessons.

Only 10% of teachers do not use computers in class in the Netherlands. When asked for the most important barrier a rather low 27% state a lack of computers in their schools as an important barrier, 22% see the lack of adequate material as a constraint. Only 1% of all and 10% of those not using ICT are not convinced of any benefits of using computers in class and just 11% express the opinion that teachers lack the necessary skills to utilize computers in their teaching.

Virtually all schools are equipped with some computers in the Netherlands and the number of computers in total and per pupil is high with an average of 21. Vocational schools are best equipped and reach 28 computers per 100 pupils. With these figures the Netherlands ranks at the top in Europe. Only Denmark achieves a higher figure.

Motivation of teachers to use ICT in class seems to be the only issue which may constitute a (small) barrier, since 18%, as opposed to a European average of 14%, have access to and the necessary competence to use ICT in class but are not motivated to do so. Nevertheless the Netherlands rank second in ICT readiness of teachers in Europe.

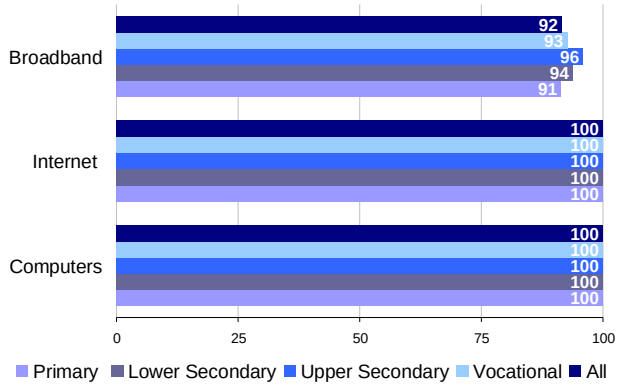
ICT Equipment and Internet in Schools

All Dutch schools now use computers for teaching and have internet access. 92% use the internet via a broadband connection. With this figure the Netherlands ranks at number 4 of the 27 countries participating in the survey. There is hardly any variation between school types and with regard to broadband access between urban and rural areas:

87% of schools have a website, 91% offer e-mail to teachers, and 28% do so to pupils. A very high 92% of the Dutch schools using computers for teaching use them in classrooms with the highest percentage being achieved in primary schools (95%).

Computers in the school library are more or less restricted to upper secondary schools.

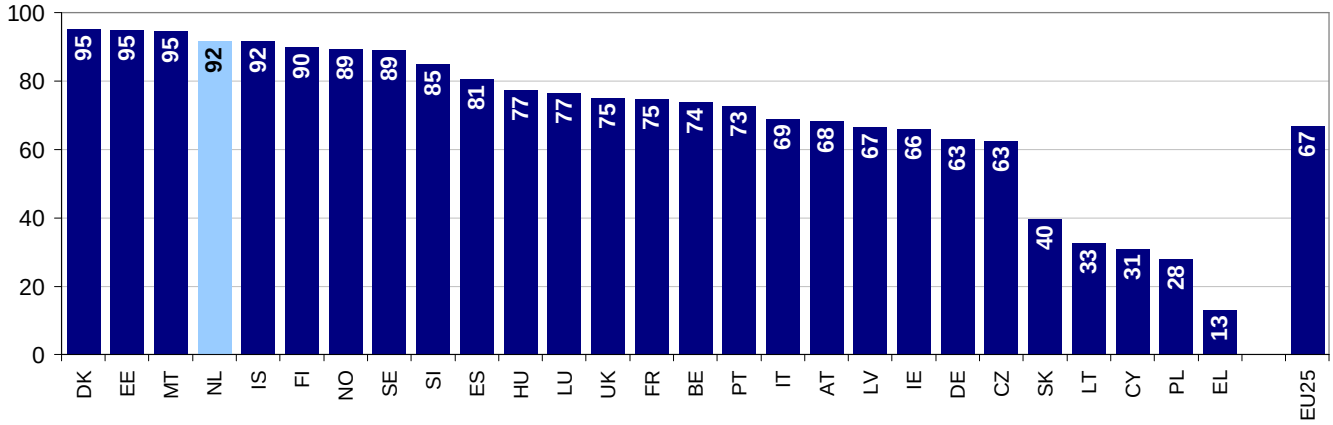
Percentage of Schools Using Computers, Internet Connection, and Broadband Internet Access According to School Type in the Netherlands 2006



Source: *LearnInd HTS 2006;* ***Base:*** *All schools;* ***Question:*** *Computers: Q6; Internet, Broadband: Q9. See questionnaire for exact wording.*

Those schools with a broadband connection to the internet are much more likely to have a more sophisticated ICT infrastructure including a school website, the use of a LAN or the availability of an intranet.

Percentage of Schools with Broadband Internet Access in Europe 2006



Source: *LearnInd HTS 2006;* ***Base:*** *All schools;* ***Question:*** *Q9. See questionnaire for exact wording.*

The use of Computers and the Internet in Schools

Computers are used for various purposes and as part of teaching different subjects in schools but also and very widely as a separate subject.

Computer sciences are taught as a separate subject in almost around 75% of lower and upper secondary and vocational schools, according to the statements made by Dutch head teachers. This is the case in only 44% of the primary schools

A very high 90% of Dutch classroom teachers had used computers in class in the 12 months prior to the survey, with little variation across school types and between urban and rural areas. For most teachers, this includes not only using a computer for presentation purposes but also the use of computers by pupils in class. Surprisingly little variation can be found in this respect according to the subjects of teaching[1].

A majority (51%) of the teachers using computers use them in between 10% and 50% of all lessons.

A rather low 12% state, that they use computers in more than half of their lessons. Teachers in vocational schools use computers in class more frequently than their colleagues in general education with 57% using computers in more than a quarter of their lessons compared to around 30% in the other school types.

ICT equipment in Dutch schools 2006

			Educational Level (NL)				Type of locality (NL)			Internet Access (NL)	
	Total NL	Total EU25	Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated	Narrow-band	Broadband
Computers per 100 pupils [a]	21.0	11.3	15.4	19.7	22.4	27.5	23.8	19.9	17.1	*16.9**	21.2
... of which internet connected	20.0	9.9	14.2	18.4	20.4	26.8	22.4	19.2	16.4	*16.3**	20.3
Percentage of schools having...											
Computers for teaching [b]	100.0	98.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	*100.0**	100.0
Internet access [c]	100.0	96.2	100.0	100.0	100.0	100.0	100.0	100.0	100.0	*100.0**	100.0
Broadband internet access [d]	91.6	66.9	91.4	93.8	95.9	92.7	88.9	93.7	91.3	*0.0**	100.0
A website [e]	87.3	63.0	85.4	92.9	100.0	96.5	96.9	89.6	72.8	*85.0**	87.6
An e-mail address for the majority of teachers [f]	90.6	65.2	89.3	94.4	96.2	97.0	90.8	93.4	85.9	*83.8**	91.2
An e-mail address for the majority of pupils [g]	27.9	23.5	23.8	36.1	41.2	56.6	27.1	29.3	26.6	*21.2**	28.5
A LAN [h]	87.0	55.2	85.2	92.8	96.5	93.6	90.5	87.3	82.3	*81.7**	87.4
An intranet [i]	41.4	40.8	32.2	69.9	84.2	92.6	51.9	37.0	36.1	*38.9**	41.6
An external support or maintenance contract [j]	69.4	47.1	71.3	56.8	66.6	60.7	66.5	73.3	66.7	*78.2**	68.6
Percentage of schools using computers for education in…											
Computer labs [k]	48.6	80.5	43.0	74.5	78.9	68.3	47.5	51.4	45.5	*35.6**	49.8
Classrooms [l]	92.1	61.4	95.4	83.7	83.0	74.2	91.0	92.0	93.5	*79.6**	93.3
School library [m]	27.1	33.4	23.7	51.7	68.3	32.8	35.2	23.3	23.3	*24.9**	27.3
Other locations accessible for pupils [n]	44.7	27.0	45.2	54.2	53.3	31.6	44.9	44.3	44.9	*45.1**	44.6

Source: *LearnInd HTS 2006;* ***Base:*** *a: all pupils; b-j: all schools, k-n: schools using computers for educational purposes for pupils (cf. index b);* ***Question:*** *a: Q4, Q6, Q7; b: Q6; c: Q9; d: Q9; e-j: Q12; k-n: Q8. See questionnaire for exact wording.* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases.*

Use of computers in class in the Netherlands 2006

Assessments of the head teacher		Total NL	Total EU25	Educational Level (NL)				Type of locality (NL)			Internet Access (NL)	
				Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated	Narrow-band	Broadband
Computer sciences taught as separate subject	Agree	50.0	54.7	44.3	77.4	75.8	73.9	50.9	47.6	52.5	*38.0**	51.1
	Disagree	48.9	43.7	54.9	21.4	19.6	23.7	47.4	52.0	45.9	*58.0**	48.1
	Don't know	1.1	1.6	0.8	1.2	4.6	2.4	1.7	0.4	1.5	*4.0**	0.8
Computers and the internet are												
integrated into teaching of most subjects	Agree	81.0	75.3	80.5	79.1	80.1	88.5	84.0	81.3	77.2	*81.7**	81.0
	Disagree	18.9	24.1	19.5	20.0	18.2	11.5	15.7	18.7	22.8	*18.3**	18.9
	Don't know	0.1	0.6	0.0	0.8	1.7	0.0	0.2	0.0	0.0	*0.0**	0.1
used for teaching traditional subjects or basic skills	Agree	87.9	75.8	88.5	86.1	85.0	86.4	88.7	87.8	87.2	*88.0**	87.9
	Disagree	11.9	22.8	11.5	13.1	13.3	12.3	11.1	12.2	12.3	*12.0**	11.9
	Don't know	0.2	1.4	0.0	0.8	1.7	1.3	0.2	0.0	0.5	*0.0**	0.2
used for teaching foreign languages	Agree	47.2	56.6	40.5	79.6	91.5	73.1	50.8	49.7	39.1	*55.7**	46.4
	Disagree	47.5	40.1	53.6	18.3	6.8	22.6	43.9	46.4	53.2	*41.4**	48.0
	Don't know	5.3	3.3	5.9	2.1	1.7	4.3	5.3	3.9	7.7	*2.9**	5.6
used for coping with students with special needs/ handicaps	Agree	92.5	71.7	94.8	88.2	76.1	78.7	91.1	93.1	93.1	*92.9**	92.5
	Disagree	6.3	23.7	4.2	9.6	20.5	19.8	7.2	6.0	5.5	*5.3**	6.3
	Don't know	1.2	4.6	1.0	2.2	3.4	1.5	1.6	0.9	1.4	*1.8**	1.2

Source: *LearnInd HTS 2006;* ***Base:*** *All schools using computers for educational purposes for pupils;* ***Question:*** *Q13: "To what extent do you agree or disagree with the following statements regarding the educational use of computers and/or the internet in your school?"* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases.*

Dutch teachers using computers do not restrict themselves to a particular source of information but use a multitude of different material from a variety of sources for teaching purposes, which in most categories is above the European average. They are also very active (83%) in using material made available on the school's network or database.

Older and younger teachers (indicator used here: years of teaching experience) make use of computers and the internet in class rather equally, with – depending on age group – between 26% and 32% using ICT in more than half of the lessons. There are hardly any differences according to age of the teachers. The overall pattern is rather similar across all groups.

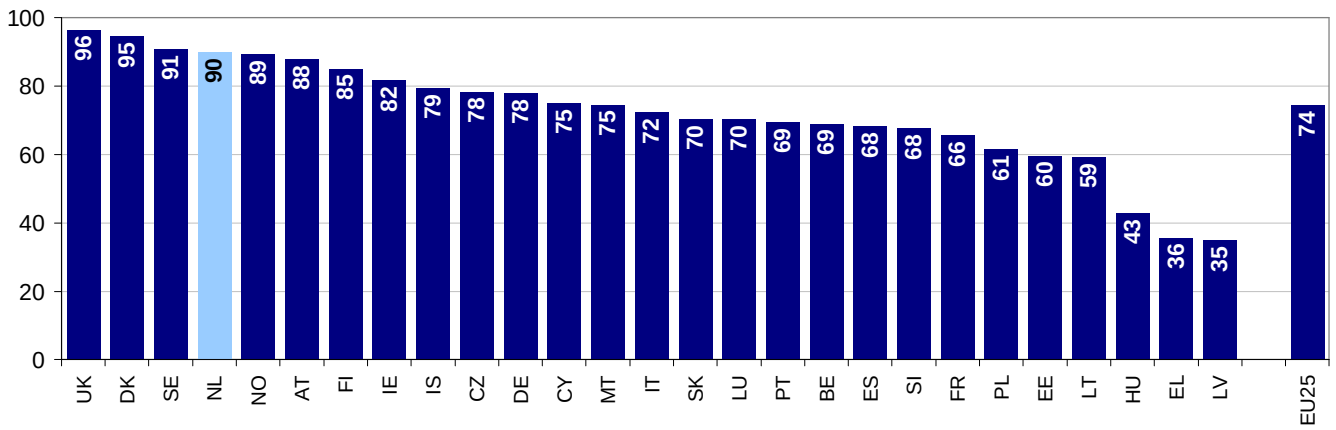
Only 10% of teachers do not use computers in class in the Netherlands.

When asked for the most important barrier a rather low 27% state a lack of computers in their schools as an important barrier, 22% see the lack of adequate material as a constraint. Only 1% of all and 10% of those nor using ICT are not convinced of any benefits of using computers in class and just 11% express the opinion that teachers lack the necessary skills to utilize computers in their teaching. Lack of interest is not an issue, since this is only articulated by 2%

This results in a situation where the statement "lack of equipment in school" is expressed by a very low 3% of all Dutch teachers (10% non-users multiplied with 27% of teachers agreeing to this item).

Virtually all schools are equipped with some computers in the Netherlands and the number of computers in total and per pupil is high, with an average of 21 while the vocational schools are best equipped and reach 28 computers per 100 pupils. With these figures the Netherlands ranks at the top in Europe. Only Denmark and Norway show better figures.

Percentage of teachers who have used computers in class in the last 12 months (2006)



Source: *LearnInd CTS 2006;* ***Base:*** *All teachers;* ***Question:*** *Q7. See questionnaire for exact wording*

Teachers' use of computers in class in the Netherlands 2006

Percentage of teachers who ...	Total NL	Total EU25	Educational Level (NL)				Type of locality (NL)			Years of teaching experience (NL)			
			Primary	Lower secon-dary	Upper secon-dary	Voca-tional	Densely popu-lated	Inter-mediate	Thinly popu-lated	<5 y	5-9 y	10-19 y	20+ y
...have used computers in class[2]	90.0	74.3	91.7	80.9	77.4	84.0	90.8	89.1	90.5	90.9	90.5	93.8	88.2
...use a computer in class to present or demonstrate	74.6	63.4	75.0	72.0	67.3	75.7	76.2	74.9	71.8	73.4	74.1	79.0	73.6
...have pupils use a computer in class	87.5	66.3	90.1	77.9	68.3	75.3	87.4	87.2	88.2	89.0	89.4	90.5	85.3

Source: *LearnInd CTS 2006;* ***Base:*** *All teachers;* ***Question:*** *Q7 "How have you used computers and/or the internet for work in the last 12 months?"*

Comparison of the situation in 2001 and 2006[3]

In the Netherlands the percentage of schools using computers for educational purposes had in 2001 already reached 100%, and internet access was at 93%. In 2006 all schools also have internet access.

While in 2001 one hundred pupils had to share 13 computers the figure rose to 21 by 2006, a very good improvement and substantially above the European average of 12.

Schools have moved over to broadband. 55% (EU25: 45%) of the schools in the Netherlands are connected to the internet via a DSL connection in 2006. In total, 92% have a broadband internet access of some kind. The figure for 2001 was just 1% (EU15: 5%). The figures have increased strongly over the past 5 years.

Schools have also strongly increased the quality of ICT use: while in 2001 44% (EU15: 44%) of the schools in the Netherlands had their own website, the figure is now 87% (EU25: 62%). The use of a LAN – which was used by 44% (EU15: 47%) of the Dutch schools – is also now up to 87% (EU25: 54%).

Frequency of computers use in class in the Netherlands 2006

Percentage of all teachers *using computers in class* who ...	Total NL	Total EU25	Educational Level (NL)				Type of locality (NL)			Years of teaching experience (NL)			
			Primary	Lower secon-dary	Upper secon-dary	Voca-tional	Densely popu-lated	Inter-mediate	Thinly popu-lated	<5 y	5-9 y	10-19 y	20+ y
...use computers in 5% and less of all lessons	16.5	18.5	16.6	21.1	28.8	8.0	14.7	19.2	13.8	13.2	14.9	16.9	18.0
in 6 to 10% of lessons	21.2	22.5	22.2	21.4	17.9	13.2	22.3	18.0	25.9	32.4	21.7	13.4	20.4
in 11 to 24% of lessons	28.9	22.2	30.2	27.0	22.9	21.4	25.0	29.3	33.2	27.8	30.6	37.2	25.7
in 25 to 50% of lessons	21.8	20.2	20.9	19.5	17.1	32.3	25.0	23.3	14.8	20.2	19.4	20.3	23.7
more than 50% of lessons	11.6	16.5	10.1	11.1	13.3	25.0	12.9	10.3	12.3	6.4	13.3	12.3	12.3

Source: *LearnInd CTS 2006;* ***Base:*** *Teachers using computers in class, "don't know" answers excluded;* ***Question:*** *Q9 "For what percentage of time have you used computers and/or the internet in class when teaching your main subject(s) in the past 12 months?"*

Source of educational material used in class in the Netherlands 2006

Percentage of all teachers *using computers in class*[4] who ...	**Total NL**	**Total EU25**	**Educational Level**				**Type of locality**		
			Primary	**Lower secondary**	**Upper secondary**	**Vocational**	**Densely populated**	**Inter-mediate**	**Thinly populated**
...use material they have searched the internet for	77.5	82.7	77.6	80.4	79.8	73.2	75.9	79.3	75.8
...use existing online material from established educational sources	80.8	74.2	83.8	75.8	74.6	58.2	75.5	82.2	84.9
...use material that is available on the school's computer network or database	83.1	63.1	85.9	72.1	67.3	71.5	82.0	83.6	83.6
...use electronic offline material (such as CD ROMS)	68.7	83.0	68.6	73.0	70.8	70.0	66.5	67.0	74.8
...use other learning material when using computers in class	1.3	8.8	0.7	5.6	4.2	4.3	2.0	1.0	1.1

Source: *LearnInd CTS 2006;* ***Base:*** *Teachers using computers in class;* ***Question:*** *Q10 "Which of the following types of materials have you used when teaching your main subject(s) with the aid of a computer and/or the internet?"*

Barriers to computer use in class in the Netherlands 2006

Percentage of all teachers ***not*** *using computers in class*	Total NL	Total EU25	Educational Level				Type of locality		
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated
Lack of computers	26.5	48.8	*20.9**	*44.3**	*27.4**	*26.9**	*30.7**	30.8	*11.7**
Lack of adequate content/material	21.7	20.3	*19.8**	*21.0**	*15.6**	*35.9**	*10.0**	30.5	*16.8**
Lack of content in national language	4.2	8.6	*5.5**	*0.0**	*0.0**	*3.2**	*0.0**	0.9	*16.8**
Lack of adequate skills of teachers	10.5	22.5	*12.3**	*7.6**	*0.0**	*6.2**	*13.2**	5.0	*19.6**
No or unclear benefits	9.7	16.2	*7.8**	*5.2**	*21.0**	*17.1**	*5.0**	12.2	*10.0**
Lack of interest of teachers	1.8	8.9	*0.0**	*2.7**	*10.8**	*6.2**	*3.2**	1.8	*0.0**
Subject does not lend itself to being taught via computers	26.7	24.4	*21.0**	*43.3**	*32.3**	*42.5**	*39.2**	27.8	*8.3**
Other	39.0	21.3	*49.9**	*9.6**	*13.7**	*21.7**	*31.0**	38.4	*50.2**

Source: *LearnInd CTS 2006;* ***Base:*** *all teachers not using computers in class;* ***Question:*** *Q12: "Why do you not use computers and/or the internet when teaching in class?"* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases.*

Attitudes on the Usefulness of ICT use in Teaching

Computers and the internet have arrived in Dutch schools and their use is steadily improving. The share of teachers in the Netherlands – but also in the European Union in general – who believe that computers and the internet should not at all be used in schools, is very low and below 1%.

Dutch teachers have positive attitudes about the different applications of ICT in teaching and achieve high figures (well above the European average) on attitudes that ICT should be used for letting pupils do exercises and practise (88%), letting pupils retrieve information in a self-directed manner (93%) and for collaborative and productive work by pupils (83%). There are very little differences across school types.

Still some 52% of Dutch teachers believe that teaching about office tools should be an integral part of the teaching process. With this figure, the country ranks below the EU25 average figure. This attitude is most prominent among teachers in vocational schools (64%) and least prominent in upper secondary schools (39%) followed by primary schools (51%). It is interesting that there is no common pattern across the European countries. In some countries (e.g. the UK, Norway, Iceland, Cyprus but also Spain) teachers in primary schools express this opinion much more strongly and to a larger extent compared to higher-level schools.

Access, Competence and Motivation for Using ICT and the Internet in Schools

Access

The majority of Dutch teachers are more or less satisfied with the technical access means at their schools: 85% state that their school is well equipped with computers and a very high 90% express the opinion that their internet connection is fast enough. However, 54% still wish there were better support and maintenance actions taken. In terms of content, 43% state problems with respect to finding adequate learning materials and 28% argue that existing materials are of poor quality.

Competence in using ICT

Dutch teachers feel most competent in using e-mail and using a text processor programme but are much less confident with downloading and installing software and with using presentation software packages.

Primary school teachers (57%) seem to be less ICT competent than those in vocational schools (41%).

Attitudes on the Usefulness of ICT use in Teaching in the Netherlands 2006

Percentage of teachers saying computers/internet should be used for …	Total NL	Total EU25	Educational Level				Type of locality		
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated
Letting pupils do exercises and practise	88.0	79.9	89.2	81.3	74.5	88.2	86.7	88.0	89.7
Letting pupils retrieve information in a self-directed manner	93.3	85.0	93.9	87.0	93.3	90.9	90.9	93.3	96.6
Teaching about office tools	51.8	61.3	50.7	53.4	38.9	63.4	53.4	51.6	50.0
Collaborative and productive work by pupils	82.9	80.5	84.6	73.9	82.1	75.0	83.4	79.4	88.9
Computer/internet should not be used for any of these in teaching	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: *LearnInd CTS 2006;* ***Base:*** *all teachers;* ***Question:*** *Q13: "What do you think for what computers and the internet should be used for in teaching?"*

Teachers' access, competence and motivation for using ICT in class 2006

Percentage of teachers agreeing or strongly agreeing:	Total NL	Total EU25	Educational Level				Subject of teaching					
			Primary	Lower secondary	Upper secondary	Vocational	General primary	Literature and languages	Humanities and social sciences	Science, maths, computer sciences	Physical, artistic, crafts education	Vocational education
Access												
Our school is well equipped with computers [a]	84.8	74.2	85.9	73.8	83.4	84.3	85.4	78.6	82.8	83.8	75.4	81.7
The internet connection we have is sufficiently fast [b]	89.8	77.2	90.3	88.3	89.8	88.5	90.1	89.9	84.2	94.7	86.4	87.4
Better technical maintenance and support is required in our school [c]	54.4	64.8	54.4	56.8	42.8	56.0	54.4	55.8	45.0	53.4	59.6	56.7
Existing teaching materials on the Internet are of poor quality [d]	28.4	29.9	27.3	35.7	35.6	33.9	25.8	41.0	29.1	42.3	33.6	36.0
It is hard to find adequate learning materials for teaching [e]	43.1	38.7	40.3	63.6	48.1	54.6	40.1	47.5	49.0	58.0	44.0	57.0
Motivation												
Pupils are more motivated and attentive when computers and the internet are used in class [f]	89.4	86.3	91.3	85.3	84.6	78.9	91.8	86.0	68.1	81.4	90.9	82.4
Using computers in class does not have significant learning benefits for pupils [g]	20.4	20.7	18.0	29.4	31.6	32.9	17.4	24.2	25.8	27.8	25.6	33.2
Competence												
Teachers in our school do not have sufficient computer skills [h]	54.9	42.0	56.9	55.2	51.4	41.0	56.2	45.7	50.6	47.5	61.8	49.8
Competence / computer skills (Percentage of teachers who feel very confident at…)												
Using text processors [i]	80.8	65.0	80.8	86.5	89.0	75.9	80.9	85.1	86.3	86.7	*73.3**	68.6
Creating electronic presentations [j]	28.9	34.0	26.6	39.8	45.5	38.7	27.4	23.6	41.0	48.2	*34.2**	34.7
Using e-mail [k]	86.6	65.9	85.5	89.4	98.5	90.9	85.3	92.2	91.6	91.8	*79.2**	85.3
Downloading and installing software [l]	37.8	35.8	36.9	44.6	52.2	39.8	36.7	40.6	37.4	51.8	*37.0**	33.1

Source: *LearnInd CTS 2006;* ***Base:*** *a-h All teachers; i -l Teachers using computers in class* ***Question:*** *a-h Q14, i-l Q11.* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases.*

Motivation for ICT use in Schools

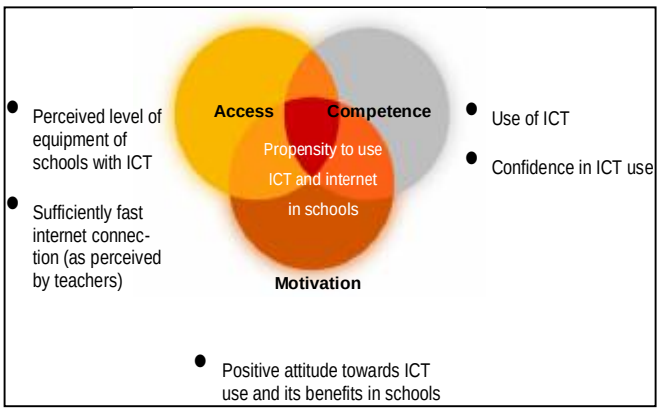
A very high 89% of Dutch teachers see significant learning benefits for pupils using computers in class and say that pupils are more motivated and attentive when computers and the internet are used in class.

ICT Readiness of Teachers – the ACM Model

The ACM model as developed by Viherä and Nurmela (2001)[5] was applied in LearnInd to generate a typology according to the "propensity to the use of computers and internet by teachers in classroom situations at schools".

The typology in the figure below takes account of the three main categories of preconditions which need to be given for a school to make use of computers and the internet in the teaching process in classrooms, computer labs etc.

The Access-Competence-Motivation Model



These are: access (to computers and the internet at school), competence (in using the computer software and the internet, and applying it for teaching purposes), and motivation (gauged through the attitude that using computers in classrooms results in significant learning benefits).

Any attempt to group the classroom teachers according to their propensity to becoming users of computers and the internet in their teaching processes needs to take account of these three dimensions. In the present application of the ACM model data from the Classroom Teacher Survey (CTS) was used. Therefore "access" for instance is to be understood as a perceived level of computer equipment at schools and teachers' satisfaction therewith rather than an objective measure of equipment status.

Access, Motivation and Competence of Teachers for Using ICT in Schools in The Netherlands 2006

NL	EU25	Access	Competence	Motivation
1.1	4.3	~~Access~~	~~Competence~~	~~Motivation~~
2.6	3.9	**Access**	~~Competence~~	~~Motivation~~
7.3	9.7	~~Access~~	**Competence**	~~Motivation~~
1.5	5.0	~~Access~~	~~Competence~~	**Motivation**
18.3	13.7	**Access**	**Competence**	~~Motivation~~
2.9	4.8	**Access**	~~Competence~~	**Motivation**
11.7	20.7	~~Access~~	**Competence**	**Motivation**
54.7	37.9	**Access**	**Competence**	**Motivation**
100	100			

Percentage of teachers. ***Source:*** *LeanInd CTS 2006;* ***Base:*** *All teachers;* ***Question:*** *See endnote* [6]

38% of European teachers dispose of sufficient access to the internet at school, the necessary competence in using ICT in class and are motivated to its use. With a very high 55% of the teachers belonging to this group, The

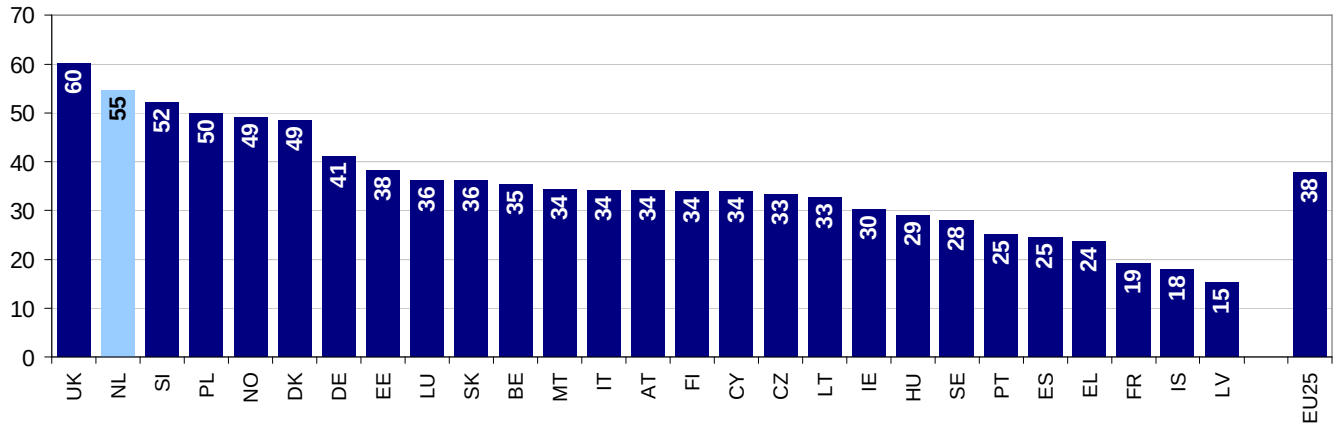
Netherlands ranks at 2nd which places the country at the top European countries and only behind the United Kingdom. Overall the UK with 60% ranks top and Latvia with 15% finds itself at the very end.

The as yet insufficient internet connection in many schools and a lack of motivation of teachers for using ICT are the most critical issues for a wider uptake of computers and the internet in schools in Europe. 20% of European teachers indicate insufficient computer equipment and the low speed of internet connection at their school as key barriers. 14% show a lack of motivation, i.e., they are of the opinion that using computers in class does not result in significant learning benefits.

The situation in the Netherlands is different with respect to ICT access which does not constitute a major problem in the Netherlands.

However, motivation of teachers to use ICT in class constitutes a barrier since 18% as opposed to a European average of 14% have access to and the necessary competence to use ICT in class but are not motivated to do so. Nevertheless the Netherlands rank second on ICT readiness of teachers in Europe.

ICT Readiness of Teachers in the Netherlands: Percentage of Teachers Fully Ready to use Computers in Class (ACM Indicator) 2006



Source: *LeanInd CTS 2006;* ***Base:*** *All teachers.* ***Question:*** *See endnote 5*

ANNEXES

Methodology Report

Universe / Sample population

In order to assure the comparability of school levels in all countries UIS-OECD-EUROSTAT "Mapping of national education programmes to ISCED 97 for school academic/year 2002/2003" [7] was used for composing the sample frame. Based on this, each country divided its school system into ICSED codes and made different combinations that existed in its country.

Sampling frame and method

The sample was composed using official databases, which contained contact data of schools. In the majority of countries the sample was drawn from a database received from the Ministry of Education.

For each country a separate template of sample frames was composed by TNS Emor. These templates contained data about school types across regions as well as location type. School types were defined based on the ISCED codes provided in UIS-OECD-EUROSTAT. Location type distribution was made according to the Eurostat type of locality classification which differentiates densely populated, intermediate and thinly populated municipalities[8]. Apart from that, each country was divided into 3-7 regions depending on the size of a country.

Based on the data provided by countries, TNS Emor composed quotas for each country. Two level stratification was used – quotas for first stage, random sample for second. The quotation for region by school type and location type was endorsed. Simple random selection was conducted by the local agency or the local source of the contact base. Both private and public schools were included in the sample. It was also obligatory to include schools of other teaching languages than the official language of a country in the sample.

Simple random sampling was used inside a quota cell. This means that if the quota for primary schools in region1 was 100 and the total number of primary school in this region was 800, then a random sample selection was be made among those 800 schools. This covered also both private and public schools and schools of other teaching languages than the official language of a country.

No more than 50% of interviews could be made in one school level. At least 10% of respondents had to be from schools, which provided professional/vocational or combined programme of vocational and upper secondary level education (in case a country did not have special quota for those schools). It did not matter whether vocational education level was coded as ISCED 3 or ISCED 4.

There were no duplications in samples of head teacher and classroom teacher surveys. This was only allowed in countries with small universe sizes (e.g. Malta, Cyprus, Iceland, Estonia, Latvia etc) and in cases where the last quota cells were very difficult to achieve or there were not enough schools of a certain type. The priority was to include as many different schools as possible. In both surveys, 5 attempts were made before giving up and only if the respondent refused was this person not contacted again.

The CATI programme generated a randomly chosen letter. The interviewer asked for the person with a surname that started on the generated letter. If there was more than one teacher whose surname started with the selected letter, the person who was first alphabetically was chosen. If the correct person was not available, an appointment was made. At least 5 attempts were made before taking another teacher.

Only in Malta, due to instructions dictated by the Education Department, would the Head Teacher randomly select a teacher who would be available for an appointment during which they would be interviewed.

Number of interviews conducted (HTS / CTS)

Country		Head Teachers	Classroom teachers
BE	Belgium	450	807
CZ	Czech Republic	500	1000
DK	Denmark	315	848
DE	Germany	450	901
EE	Estonia	400	851
EL	Greece	500	1000
ES	Spain	518	1022
FR	France	501	869
IE	Ireland	403	626
IT	Italy	500	900
CY	Cyprus	150	600
LV	Latvia	451	902
LT	Lithuania	457	908
LU	Luxemburg	82	277
HU	Hungary	500	1000
MT	Malta	100	200
NL	Netherlands	515	890
AT	Austria	320	450
PL	Poland	500	1000
PT	Portugal	450	900
SI	Slovenia	253	460
SK	Slovakia	502	1000
FI	Finland	318	601
SE	Sweden	200	450
UK	United Kingdom	450	905
IS	Iceland	177	424
NO	Norway	494	708
TOTAL		**10456**	**20499**

Fieldwork

Fieldwork was coordinated by the TNS Emor and conducted in cooperation with its local TNS offices excluding Iceland, Cyprus, Austria, Slovenia and Malta where TNS does not have offices. In these countries partners with whom TNS had previous experience were used.

Pilot interviews prior to the regular fieldwork were conducted with 20 schools in both target groups in Estonia and Greece in February 2006, in order to test the questionnaire (structure, comprehensibility of questions).

Between March and April 2006, surveys among head teachers (head teacher survey - HTS) and classroom teachers (CTS) were carried out in 27 European countries. TNS Emor was responsible for the fieldwork.

Weighting schemes

After the fieldwork, weighting coefficients were computed using region, location type and school type.

Statistical accuracy of the survey: confidence intervals

Statistics vary in their accuracy, depending on the kind of data and sources. A "confidence interval" is a measure that helps to assess the accuracy that can be expected from data. The confidence interval is the estimated range of values on a certain level of probability of error. Confidence intervals for estimates of a population fraction (percentages) depend on the sample size, the probability of error, and the survey result (value of the percentage) itself. Further to this, variance of the weighting factors has negative effects on confidence intervals.

The calculation of confidence intervals is based on the assumption of (quasi-) infinite population universes. In practice, however, in some countries and for some school levels the complete population of schools consists of only several hundred or even a few dozen of schools. In some cases, literally each and every school within a country-school type cell was contacted and asked to participate in the survey. This means that it is practically impossible to achieve a higher confidence interval through representative school surveys in which participation is not obligatory.

Country Background Data

The Netherlands belong to the wealthier states in Europe. Only 10 % of the 16,067 million inhabitants live in rural areas, which is low in comparison to most other states. The GDP per Capita is above average, but little of it is spent on education.

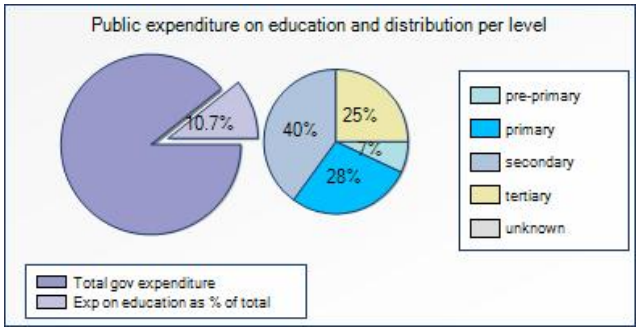
General Population Data for the Netherlands 2002/03[9]

Total population (000)	16,067
Annual population growth rate (%)*	0.7
Population 0-14 years (%)	18
Rural population (%)*	10
Total fertility rate (births per woman) *	1.7
Infant mortality rate (0/00) *	4
Life expectancy at birth (years) *	78
GDP per capita (PPP) US$ *	29,038
GDP growth rate (%)*	0.2
* World Bank World Development Indicators	

Resources for Education in the Netherlands 2002/03

Pupil / teacher ratio (primary)	…
Public expenditure on education :	
as % of GDP	5.1
as % of total government expenditure	10.7
Distribution of public expenditure per level (%):	
pre-primary	7
primary	28
secondary	40
tertiary	25
unknown	-

Resources for Education in the Netherlands 2002/03



The Educational System in the Netherlands[10]

The total population of the Netherlands is 16.2 million people. In 2003 the total number of participants in government-funded education was 3,578 million pupils and students. The general language of instruction is standard **Dutch**. In the province of Friesland **Frisian** has an official status. Schools in Friesland teach both in Dutch and Frisian. **Other living local dialects,** such as Lower-Saxon, may be used as the language of instruction at educational establishments in areas where they are spoken alongside standard Dutch.

According to the Constitution people have the right to found schools and to provide teaching based on religious, ideological or educational beliefs. As a result there are both publicly run and privately run schools in the Netherlands. Some 70% of pupils attend privately run schools. Public and private schools are statutory equals. This means that government expenditure on public education must be matched by spending on private education. The freedom to organise teaching gives private schools freedom to determine what is taught and in what way. This freedom is however limited by the qualitative standards set by the Ministry of Education, Culture and Science in educational legislation.

A distinctive feature of the Dutch education system is the combination of a centralised education policy with decentralised administration and management of schools. **Central government** controls education by means of regulations and legislation, taking due account of the provisions of the Constitution. Its prime responsibilities with regard to education relate to the structuring and funding of the system, the management of public-authority institutions, inspection, examinations and student support. Central government also promotes innovation in education. The Minis-

ter is, moreover, responsible for the coordination of science policy and for cultural and media policy.

Primary and secondary education deal with management at regional and local level. Both schools differ in management at school level. The involvement of the **provincial authorities** mainly takes the form of statutory supervisory and judicial duties. The Provincial Council ensures the availability of adequate numbers of publicly run primary and secondary schools and acts as the appeal body for private schools with regard to decisions taken by the municipal authorities. With regard to the management of schools and the curriculum, the role of the provinces is limited, partly because they cannot be the competent authority of an educational institution.

The **municipal authorities** are the local authority for all schools in the area, whether publicly or privately run. Both **private and public** schools (**primary and secondary education**) have a legally recognized competent authority, also referred to as the school board. The competent authority administers and manages the school or schools for which it is responsible (all material aspects of the organisation of a school, determining policy on the curriculum, personnel matters and the admission of pupils). The competent authority is responsible for what goes on in the school insofar as this is governed by statutory regulations. Some of its powers may be delegated to the school head, but responsibility continues to lie with the competent authority. In the case of public primary and secondary schools, the municipal executive may act as the competent authority. Alternatively, the municipal council has been able, since 1997, to opt to delegate the tasks performed by the municipal authorities as the competent authority of publicly run schools to some other type of body governed by public law.

The competent authority of private schools is an administrative body governed by private law. There are two types of school board or competent authority: associations and foundations, the latter being the most common. There are no intermediate levels of management between government and **adult and vocational education institutions**. **Institutions for higher professional education** and **universities** are fully autonomous. The **Education Inspectorate**, for which the Minister of Education, Culture and Science is responsible, supervises the quality of education. The Inspectorate bases its assessments on the principle that the institutions themselves bear primary responsibility for the quality of teaching.

The use of ICT in Education[11]

The new primary education programme BUURLANDEN focuses on ICT as a means of virtual mobility. Much has recently been invested in ICT in schools, not only money, but also encouragement and facilitation. In recent years, ICT budgets have increasingly become part of regular budgets in all education sectors. The government has an important role as facilitator. This role is visible in the Ministry's ICT policy for 2003-2005 and parameters are being put in place for the use of ICT in education: sufficient financial resources for schools and colleges, Internet infrastructure, upgrading teachers' ICT skills, offering educational, web-based material and software, and improving knowledge and experience of ICT in teaching. From 2005 onwards, ICT teaching policy will be integrated in education and innovation policy.

At the moment, an interministerial ICT action plan is being fleshed out. Its aim is to improve broadband performance over the 2005-2007 period. Where teaching is concerned, the aim is for ICT to contribute to innovative education geared to the needs of individual pupils, teachers and managers, but also to social trends and needs. One of the focal points is ensuring high-quality material, so as to be able to make good use of current facilities in the learning process and thus increase the learning yield. There is also scope for reducing the administrative burden – which schools perceive as too heavy – by improving the administration system.

The Study

There is a lack of information on the actual use of ICT for learning in schools and for supporting political action in potential future programmes. It is necessary to clarify matters such as the educational vision of heads of schools, the current impact of ICTs on teachers' practice, support and training and on other factors for success in e-learning.

The objective of the study is to obtain estimates for the eEurope 2005 indicator on e-learning "number of pupils per computer with Internet connection (broadband/non-broadband)" and relate it to other possible indicators of educational use of ICT in compulsory education (e-learning in schools). The study looks at how Information and Communication Technologies (ICT) are used in schools.

The study is a continuation of the earlier benchmarking exercise for eEurope 2002.

It involved two surveys. Firstly of head teachers to obtain information on the schools and then of teachers to focus on their use of ICTs in the teaching process

This exercise is part of the Information Society monitoring and benchmarking process for which the Commission in cooperation with the Council defined benchmarking indicators.

Country Briefs

This document has been prepared by **empirica** based on own desk research and the above mentioned primary data sources: Head Teacher Survey (HTS) 2006 and Classroom Teacher Survey (CTS) 2006 in the EU25 member states, Iceland and Norway.

Altogether 27 LearnInd Country Briefs are available in a common format, one for each member of the enlarged European Union, Norway and Iceland.

A final report has also been developed. It includes approximately 100 exhibits, more than 250 data tables and a report about the key results.

You can access and download these documents in PDF format (for free) from http://ec.europa.eu/information_society/eeurope/i2010/benchmarking/index_en.htm.

More information

Check our results and achievements on: http://ec.europa.eu/information_society/eeurope/i2010/benchmarking/index_en.htm. If you wish to be provided with more details, or to receive news and updates, please contact us at: **learnind@empirica.com** or get in touch with us.

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1 It has to be noted that teachers however in most cases have more than one subject and may use computers only in one subject. This has not been surveyed

2 Note that "in class" means during lessons while teaching and does not denote a particular location such as a classroom.

3 This section includes some comparisons of the Eurobarometer Flash 94/1001 and 95/102 results from 2001 with those from the LearnInd surveys from 2006. Please bear in mind that the figures are not directly comparable due to the use of slightly different approaches and methodologies.

4 Base (100%) = all teachers who have used a computer in class in the last 12 months.

5 Viherä, M-L, Nurmela, J (2001) "Communication Capability Is an Intrinsic Determinant for Information Age", in Futures, Volume 33, Issue 3-4:245-265.

6 Synthetic indicators: Access: Q14 (2) "Our school is well equipped with computers" and Q14 (3) "The internet connection we have is sufficiently fast ".

Competence: Q11 How confident do you feel... a) using a text processor, b) creating a presentation c) using e-mail, d) downloading and installing software. Threshold: Average of 2.5 or more on a 1-4 confidence scale

Motivation: Q14 (8); disagree with "Using computers in class does not result in significant learning benefits".

For full question wordings refer to questionnaire.

7 http://forum.europa.eu.int/Public/irc/dsis/edtcs/library?l=/public/unesco_collection/programmes_isced97&vm=detailed&sb=Title

8 Densely populated area refers to a set of closely related local units, each one of which having a density greater than 500 inhabitants per km2, and the total population of which being of at least 50 000 inhabitants; Intermediate area refers to a set of closely related local units that do not pertain to a densely populated area, each one of which having density greater than 100 inhabitants per km2, and where the total population is at least of 50 000 inhabitants or it refers to a set that is adjacent to a highly populated area. Thinly populated area (rural): refers to a set of closely related local units that are not part of a densely populated area, or of an intermediate area. (A set of local areas totalling less than 100 km², not reaching the required density, but entirely enclosed within a densely-populated or intermediate area, is to be considered to form part of that area. If it is enclosed within a densely-populated area and an intermediate area it is considered to form part of the intermediate area).

9 Source: http://www.uis.unesco.org/profiles/selectCountry_en.aspx (visited 28 March 2006)

10 Source: http://www.eurydice.org/Documents/struct2/frameset_EN.html (visited: 28 March 2006)

11 Source: http://europa.eu.int/comm/education/policies/2010/nationalreport_en.html (visited: 9 May 2006)